

WHAT IS CLAIMED IS:

1. A substantially pure polypeptide comprising an amino acid sequence at least 60% identical to SEQ ID NO:20 or 25, wherein the polypeptide has a G protein-coupled receptor protein activity.

5 2. The polypeptide of claim 1, wherein the G protein-coupled receptor protein activity is binding to histamine.

3. The polypeptide of claim 1, wherein the amino acid sequence is at least 70% identical to SEQ ID NO:20 or 25.

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4. The polypeptide of claim 1, wherein the amino acid sequence is at least 80% identical to SEQ ID NO:20 or 25.

15 5. The polypeptide of claim 1, wherein the amino acid sequence is at least 90% identical to SEQ ID NO:20 or 25.

6. A substantially pure polypeptide comprising the sequence of SEQ ID NO:20 or 25, or a fragment thereof that a) has a G-protein receptor coupled protein activity, or b) is immunogenic.

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7. A substantially pure polypeptide encoded by a nucleic acid that hybridizes under high stringency conditions to the sequence of SEQ ID NO:21 or 26, wherein the polypeptide has a G protein-coupled receptor protein activity.

25 8. An isolated nucleic acid encoding the polypeptide of claim 1.

9. An isolated nucleic acid encoding the polypeptide of claim 6.

30 10. An antibody that specifically binds to the polypeptide of SEQ ID NO:20 or 25.

11. An isolated nucleic acid comprising a strand that hybridizes under high stringency conditions to the sequence of SEQ ID NO:21 or 26, or the complement of SEQ ID NO:21 or 26.

5 12. The isolated nucleic acid of claim 11, wherein the nucleic acid encodes a polypeptide having a G protein-coupled receptor protein activity.

13. The nucleic acid of claim 12, wherein the G protein-coupled receptor protein activity is histamine binding.

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14. The nucleic acid of claim 11, wherein the strand is at least 15 nucleotides in length.

15. A vector comprising the nucleic acid of claim 8.

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16. A vector comprising the nucleic acid of claim 9.

17. A vector comprising the nucleic acid of claim 11.

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18. A vector comprising the nucleic acid of claim 12.

19. A vector comprising the nucleic acid of claim 14.

20. A cultured host cell comprising the nucleic acid of claim 8.

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21. A cultured host cell comprising the nucleic acid of claim 9.

22. A cultured host cell comprising the nucleic acid of claim 11.

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23. A cultured host cell comprising the nucleic acid of claim 12.

24. A cultured host cell comprising the nucleic acid of claim 14.

25. An antibody that specifically binds to the polypeptide of claim 1.

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26. A method of producing a polypeptide, the method comprising culturing the cultured host cell of claim 20 under conditions that permit expression of the polypeptide in the cell.

10 27. A method for identifying a compound that modulates a G protein-coupled receptor activity, comprising the steps of:

a) contacting a polypeptide of claim 1, or a cell transected with a nucleic acid encoding the polypeptide of claim 1, with a test compound;

b) determining whether the test compound modulates a G protein-coupled
15 receptor activity of the polypeptide or cell,
thereby identifying a compound that modulates a G protein-coupled receptor activity.

28. The method of claim 27, wherein the G protein-coupled receptor activity is histamine binding.

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29. The method of claim 27, wherein the G protein-coupled receptor activity is changing cellular cAMP concentration, changing cellular calcium concentration, activating a G protein, activating phospholipase C, or changing intracellular pH.

25 30. A kit comprising the polypeptide of claim 1 and instructions for use in a method of screening.

31. A substantially pure polypeptide, the sequence of which consists of SEQ ID NO:20 or 25.

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32. An isolated nucleic acid sequence comprising SEQ ID NO:21 or 26.

33. An isolated nuclei acid sequence comprising a sequence encoding the polypeptide of SEQ ID NO:20 or 25.

5 34. A compound isolated by the method of claim 27.

35. A pharmaceutical composition comprising the compound of claim 34 as an active ingredient.